THE EXTENSION OF THE HIGH-SCHOOL COURSE.

I WISH to urge the claims of a possible and eminently practical solution of the problem of the correlation of secondary with other types of instruction. The plan submitted is, of course, not original, and it is not new, either in theory or in practice. In the discussion of any proposed reform it is well to bear in mind that human wisdom can hope to achieve nothing perfect. Rational reform is purely a question how to get more of the better with less of the worse. The world moves, and we must move with it. We cannot afford to pin our faith to the coward motto: "Let good enough alone." The law of progress is on our side only when we are on the alert for better things, when we note and take to heart the lessons of experience elsewhere, and when we take our bearings from high ground. To live and strive in this law is peculiarly the debt which the teaching profession owes to civilization.

Fundamentally, instruction divides itself into four types: elementary, secondary, advanced, and special. The first three, which are general, it is necessary to characterize. Their functions, in the main, may be differentiated as the acquirement of the common rudiments for the elementary, the attainment of fuller knowledge and training for the secondary, and research and productive scholarship for the advanced instruction. These functions are not at all mutually exclusive, and differ in degree rather than in kind; for all teachers, of whatever type, are caretakers and sharers in the complete purpose of education—the development of the physical, intellectual, and moral powers, together with an insight and ultimate disposition to fructify them in the interests of what is worthy in the self and in humanity.

The pupil leaves the common school at the critical age when his interests are unsettled, his powers of insight nascent, and he is just beginning to grasp the larger relations in his life's world, unable wisely to adjust himself to some sphere of action in it. To provide education for able youth, in consequence of which life may be lived on a larger and higher plane, with more enlightenment, and with greater

command over opportunities, and for the betterment of society, high schools exist. The aim of secondary instruction may be particularized as follows: an elementary knowledge of the facts, truths, and laws of relation in the domains of science, history, government, and literature; a fuller development of loyalty to the bettering influences, culminating in due time in seriousness of purpose; last and most important, depth of insight, sanity of judgment, and the power of adapting means to ends—the last a quality singularly unrecognized and neglected. "Knowledge is power" only when it is the possession of a trained intellect. The conditions for the training in these essentials are at a white heat in the adolescent period, for it is the period when assimilation by memory is supplemented by a rapidly growing power of the understanding, and when interest is most in the ascendant.

During the period of secondary, as well as of elementary, instruction the purpose should be general rather than special. There is a tendency, however, in our high schools to permit scholars to select work along the lines of aptitudes. To most pupils studies along the lines of least resistance are the most flattering, and therefore the most interesting. Electives should not only be controlled, but largely discouraged. In the main, courses only should be elective, and these alike hard and broad. There are culture-epochs in the history of the human race, and it is well known that these epochs tend to repeat themselves in the growth of the mind. In a normally constituted child one interest develops into another. They are legitimate, and at their white heat the most should be made of them. But no mental bias should be established prematurely, else the mind becomes narrow and stunted. Difficulties must be met and overcome, and weaknesses trained into strength. For more reasons than one the hard study is most necessary and beneficial. It is a spiritual just as much as a physical law that without resistance there can be no increase of potential. Eclecticism in studies for the mentally undeveloped seems to be founded in a theory more plausible than sound.

Moreover, studies in secondary schools must be directed for the training they afford and the insight they give into the realities in life, and not because they lead to colleges. Unless this view is kept steadfastly in mind, high schools and academies easily degenerate

into institutions of preparatory cramming. It must, however, be conceded that the preparatory purpose comes in as a strong second-best, for in every high school there are at least a few bright enough and deep enough to continue their work. By the time the secondary course is completed the student has had a chance to discover his forte to some extent. For him the professional schools exist, to equip him for any particular calling, or the university with its training for larger opportunities in any chosen field of work.

Now, unfortunately for our higher education in this country, very much of the secondary work is still, and for a long time must be, continued in the university. Both high schools and universities are in a state of transition. Consider that the high schools of today are modeled much after the academies preparatory to the old-time college, that the old-time college taught practically nothing but secondary branches, and that only recently has there been manifest a trend toward advanced education. The number of institutions in America doing much like real university work can be counted almost on the fingers of one hand. It is a far cry from our best to the European centers of learning with their research and productive scholarship. Our universities are continually increasing their requirements for admission, in the hope of having the lower schools do much of the secondary work by which they are handicapped. The demand is right, and it is timely, if we are to progress to the fulness of our promise. This country of ours is new with splendid potentialities undeveloped. From crude bigness in population, in miles of railroad, and in the unparalleled production of wealth, we wish to rise to real greatness in things intellectual.

But how are the lower schools to do more with their already crowded courses? The only possible remedy would seem to lie in the extension of the high-school curriculum. Ultimately, and before many years, the extension must be upward to include much, if not all, of the secondary branches now covered in the colleges. The University of California, because of its overcrowded condition, sees no other practical solution, and the committee of the faculty in charge of the recent revision in entrance requirements seriously discussed the future advisability of having the high schools do most of the work now done in the first two years at the colleges. It is held,

moreover, that in the high schools with their smaller classes, and hence more individual attention, the secondary studies can be carried more thoroughly and satisfactorily than is possible at the university. It is not, however, my purpose to advocate an upward extension of the high-school courses, but to contend for a necessary economical, and harmonious readjustment between the secondary and the elementary schools.

The American high school has been brought practically to the door of every home, and the time-worn argument of injustice to taxpayers is shelved. Strangely enough, the most expressed and latent opposition to high-school progress seems to come from educators interested more directly in the work of elementary schools. Many would have it that education should be democratic, and that the demands of higher education are on this account somewhat open to disparagement; that it is not so much necessary to supplement the advantages of pupils already strong, but to apply the main stress of instruction for the benefit of those not so favored. Genius, it is said, will find its own high level of efficiency, and the strong are already too much alive to the main chance. These objectors would make our educational system conform mainly to the needs of the mediocre majority. The same philosophy is made to apply to class work. Anybody, it is alleged, can teach bright scholars. They teach themselves. The good teacher is measured by the ability to make a good showing with poor material. There is a large measure of truth in this position. But if, in consequence of accommodating the quality and the quantity of instruction to the duller average, the strong pupil is undertrained of his full measure of power, may it not be argued with even more justice that the state is defrauded of its highest hope? I believe it is so. It is the strong pupils who become our leaders in all the walks of life, from the professions down to the humblest callings—our rulers, our ministers, editors and educators, our captains of industry, and the embellishers of every community. It is through them our work as teachers becomes most beneficent to society. Instruction and educational systems are in the interests of the bright children first, and need not militate against the weak. Nature herself gives us our cue, for she always favors the strong in the race; but, unlike nature, let us help also the less favored, and

as teachers be merciful to their best endeavors. To democratize education is to predestine the failure of democracy. It is its aristocracy that contributes most to the progress of any nation—aristocracy not of wealth nor of blood, but of ability, influence, and character. It is the leaven that permeates, moves, and uplifts the mass, and yet is not distinguishable from it. The state, therefore, owes it to itself to provide adequate higher instruction for its best citizens. Saint-Simon's formula in economics for the just distribution of opportunity ought to hold in education: "To each according to his capacity, to each capacity according to its work."

It is possible to organize a system of instruction so that the three types shall be independent, the lower of the higher, and yet so co-ordinated that a scholar may pass from the elementary school through the university, or drop out at any point, and get the best training, up to that point, he is capable of with the least waste of time and effort. This co-ordination of sequence should be recognized as the prerequisite in any system which seeks completeness and economy. As matters now are, the gradual and natural transition through all the grades is impossible. Furthermore, our whole system seems to be vitiated by two cardinal vices—undertraining and oversmattering. There is a confused and confusing effort to cram into the growing mind an assortment of encyclopedic knowledge of everything which for private and state reasons is held to be worth knowing. The result is somewhat like a picture which is a hodgepodge of miscellaneous impressions out of focus, with no fundamental lines expressing unity, proportion or perspective. A bungling application of the principles of co-ordination and correlation along the lines of apperception is expected to render digestible all the stuff crammed into the overloaded brain, and the success with which the brighter hopefuls memorize and reproduce literally the lessons is to the teacher a self-flattering gauge of the assimilation of the ideas and the potentialities of the particular study.

After eight years in the elementary schools our pupils enter upon the high-school course. The methods in vogue in the two kinds of schools are necessarily at variance, and so the transition is abrupt and violent. Worst of all, the pupils are sadly deficient in the power of application. Yet the course must be covered in not more than

four years. As a result the classes are jammed through the studies. The sciences, mathematics, and history are literally bolted, and the training would be comparable with that in spelling if in the grammar schools that subject were shelved after a year's drill.

To illustrate how inadequate our secondary course is, I shall attempt in the light of educational values to point out what ought to be accomplished in certain lines.

High schools are supposed to teach what are called the lesser mathematics. As a matter of fact, an almost pitiful minimum is required—algebra through quadratics, and plane geometry. Solid geometry, plane trigonometry, and advanced algebra are added in a small minority of schools. Of co-ordinate geometry, whose elements are easier and its principles of infinitely more importance than advanced algebra, one hears nothing. The whole subject, as far as the ground is covered, is divided and treated separately under different aspects, each of which gets a short monopoly of attention, is jammed and crammed, and then shelved. Now, the rational, economical, and really effective way is to present mathematics as one subject, to distribute the work through year after year, and gradatim, so that with long contact the insight into mathematical relations and the power of thinking may grow with the mind as it develops toward maturity. Algebra and geometry, and trigonometry as soon as may be, should be taught together and continually co-ordinated by means of the Cartesian geometry. There are beginnings of this method in America, and it has long been almost universally in vogue in Europe. Professor Young, of the University of Chicago, who has recently spent a year in Prussia to observe high-school methods in the teaching of mathematics, found that the Prussian schools cover all the lesser mathematics. including calculus, in four-sevenths of the time we require to cover the same ground, and with results at least as good as the very best accomplished in this country.

High schools are expected to carry natural science pretty effectively. In California all our students are required to study physics as the most practical and the most fundamental branch. A small portion of them have an opportunity for studying chemistry—and the proportion who add botany and zoölogy to their attainments is very small. To develop insight into the relations existing in the

concrete world is a function peculiar to science-training, and is hence most conducive to material progress. The most essential quality of genius, as has been well pointed out, consists in the extraordinary power of seeing new relations. It is this high capacity of the intellect, joined with a dominant will to achieve, which, in any sphere of activity, originates the very elements of progress. If it is in the power of any line of study more than any other to arouse, discipline, and fructify the capabilities of genius, and particularly along the more utilitarian lines, that study is science. But science-training, training that is more than science cramming, cannot be attained in the small time allotted in our present courses. Just now we hear much about another study that some educators would have made an optional substitute for physics. It is called a course in general science, and should embrace the fundamentals of the four sciences, already mentioned, and include much of the derived sciences, such as physical geography, meteorology, geology, and astronomy. Such a course is much needed, and should develop a broad and intelligent understanding of the dynamics of nature. It ought not, however, to be given as a substitute for physics, but always added to it, and later in the course, as an unconditional requirement.

Perhaps even more important than the sciences, from the standpoint of culture, are the so-called humanitarian studies. A knowledge of history broadens the sentiments and emancipates from narrowness. Ultimately it should ripen into an understanding of social movements and of human nature in the large. The history of our own country and civics should be a fitting climax. Now, the time required to cover the ground with anything like elementary adequacy is one year for ancient history, one year for mediæval and modern history, which ought imperatively to be followed by a year in English history, and lastly, one year in American history—four years in all. Yet, as matters now stand, students usually get but two years in the high school, and too commonly go through college without completing the subject of general history at all.

A high-school course should include the study of at least two foreign languages. They open vast resources of literature and of information not otherwise available. The training qualities inherent in language study are commonly underestimated, and all too com-

monly by language teachers themselves. To render the thoughts of the foreign masters into equivalent and idiomatic English calls forth powers of self-expression more original and of a higher order than obtains in most composition work. It is certainly true that classic students excel in adequate and finished expression. At least a good reading knowledge at sight should be acquired, and a high premium should be placed on the ability to speak the modern languages. The Germans put it well: "A man becomes twice a man when he learns to think in another language." But for purely cultural purposes, Latin and Greek are entitled to the primacy. They contain the most perfect models of literature. As inflectional languages they have greater training power, and they have furnished to our English a multitude of root-words. Our scientific vocabularies are entirely derived from them. A knowledge of the classic tongues, therefore, promotes an understanding of our mother-speech as does no other. Latin especially should be pursued as an indispensable condition for sound learning. The time available for any modern tongue is entirely too short, and in the long run the result amounts to little else than a forgotten smattering. In passing, I wish to drive home one point. We begin our linguistic study too late. The sooner after the age of ten the better. It is the age when the language faculty is still nascent, and word assimilation is still at its best. Why Americans as a rule are inferior linguists no doubt finds its explanation in deferring the study too long.

Time forbids to touch upon the needs of other departments of secondary work—of the paramount worth of English, whose worth, however, is pretty well recognized; of manual training, whose claims are not so generally acknowledged, that is, training in the use of tools, not for the mere learning of a handicraft, but to render the hand ready and skilful in giving form to the mind's contrivings, in short, hand-and-brain correlation—a subject so important, so full of possibilities and many-sided bearings, practical, æsthetic, and even ethical, as to demand a separate treatment.

Now, for entering successfully upon a course of secondary instruction, how much elementary instruction is needed? For all the purposes of the high school, the essential test consists in the ability to read easily and understandingly, and to have a taste for reading;

to write legibly and to compose thought in clear and simple English; a fair ability for quantitative reasoning as applied to very ordinary problems, accuracy in performing the fundamental operations, and the correct expression of mathematical relations by means of symbols; perhaps enough of the simple elements of grammar to begin the study of a foreign tongue; above all, a fair power of application. Other attainments may be presupposed or taken for granted. These prerequisites would seem moderate, and eight long years a prodigious length of time to effect them. Our elementary instruction is said to lag two years behind that in European countries. Nevertheless, there is found in our entering students a serious lack of drill. Reading is too often neglected because of other requirements. High-school teachers are known almost everywhere in California to give much extra time to drill in the spelling of the commonest words. Even the most juvenile composition is frightfully defective. In arithmetic we have no very serious drawbacks to record, excepting very careless notation. But when we come to grammar, there is something radically wrong. Everywhere in the high schools, both in the cities and in the country, it is necessary for teachers of English and Latin to waste weeks and months to drill in the simplest essentials. I believe the indictment lies against the text-books used. The principles of grammar are simple enough. But hairsplitting grammarians with too little equipment have tinkered with terms, differentiated, complicated, befangled with diagrams, and altogether so exalted the trivial to the confusion of the essential as to make the ordinary English grammar text almost a joke and a thing of scorn to the philologist.

But why teach technical grammar at all in the common schools? To teach correct English expression? Correct expression is almost entirely the result of habitual usage. As well expect a principle of geometry to guide the saw of the carpenter as to expect the correct use in the pronouns "I" and "me," or in "as" and "like," from the conning of a rule. Now, there is a place for technical grammar, and in many states it is given in the high school, where it belongs.

I am drawing to the inevitable conclusion, for I have purposely kept the final proposition in abeyance. There is a simple and effective remedy for these our ills of adjustment. The movement for its

incorporation into our school system has been on foot for some time; mention of it has been made in behalf of California; it has the warm approval of many educators; its operation is actually under way in one or two of the older states; it has for generations been the established practice in most of the countries of Europe. In conclusion I shall urge additional reasons for its early introduction into our own country, and into California in particular.

The plan is neither more nor less than to leave the grammar schools pretty much as they are, with their eight or nine grades for pupils whose schooling ceases with elementary work, but to require pupils who are to take up secondary work to enter the high schools at an earlier age, and to increase the length of the high-school course to at least six years.

Upon consideration it will be found that the lines of transition from the elementary to the secondary instruction naturally have their point of departure at the end of the sixth grade.

The sequence of studies can be made more logical, can be made to cover more ground, and with less stress, less waste of time in the life of the scholar, more adaptable to his state of development.

It is evident that with a longer secondary course the violent and sudden stress bearing hard on a large proportion of new students could be much mitigated, since the amount of work could then be made commensurate with their immature but growing powers of attainment.

It must be apparent, too, that the bright pupils in the elementary schools do not acquire an effective power of application by doing the tasks meted out to suit the average capacity of the class. In the high school, on the other hand, the average of ability is obviously much nearer their measure. In the upper grades pupils do not get out of their work anything like the interest, absorption, and results commensurate with their strength, and the fault lies chiefly in doing a kind of work that does not appeal to serious effort. Consequently scholars get into the pernicious habit of dawdling away their precious time, and become undertrained in the power of application.

The pupils would get the advantage of coming two years earlier under the care of teachers who are teaching their fortes. For high-school work the universities of this state recommend only teachers

with special equipment and pedagogical training in the line of the specialty.

For pupils who are to pursue the secondary mathematics the time now given to arithmetic in the grades involves a prodigious amount of work that comes near being misdirection. Why take up hours, hundredfold in the aggregate, working problems by headbreaking analysis for which the algebraic equation offers an easy solution? Why at all do any kind of work that the pupil will cover in the high school—mensuration, for instance—or why force under conditions of immaturity a faculty for whose fuller development subsequent instruction provides? We are often deceived in the supposed discipline pupils are thought to get from arithmetic. Scholars are frequently able to solve every problem in the book, not because they clearly apprehend the relations of the given quantities, but because they can relegate the example to a remembered process, or paradigm, of solution, but are "floored" by a simple problem they fail to associate with a formula of operation.

With no more grammar drill than is covered in connection with composition work before the close of the sixth grade, pupils ought in the high school to learn all the essentials of grammar in a few months at the most, preferably under the instruction of the teacher of Latin, and should be contributory to the study of Latin to follow it immediately, or go with it. In deference to the possible objection that a pupil cannot learn English grammar by the study of Latin, it is only necessary to state that the study of any language must begin with that of its grammar, and in all Aryan tongues the principles of expression are alike. The parts of speech are the same, and even many of the principles of syntax. Expression is governed everywhere by the same natural conditions of person, number, case, time, mode, etc.

Languages, in the main, differ not in principles, but in vocabularies and idioms. It is only in the study of another tongue that the student is enabled clearly to distinguish between what is a general principle and what is an idiomatic construction—a very good reason why the study should be deferred to the high school. It is a common remark of our scholars that they never understood grammar until they took up Latin. What is this but an exemplification of the true saying that no one knows his own language well who does not know any other?

Again, why should a common-school pupil need to study United States history and civil government, when these are prescribed in the high-school course as an absolute requirement, as is the case in this state? The elementary work should consist rather in reading and class work of short and interesting biographies in chronological sequence of the makers of American history, from Columbus down to Roosevelt. Children are apt to become hero-worshipers. Into these biographies could be woven incidentally as many historical facts as desirable. Continuing this plan in the high school, the great personages in the world's history could be taken up in much the same manner, and thus a good foundation be laid for the subsequent study of history proper, culminating in United States history and civics, as before indicated. And is not this also the rational order? He understands his country's history best who knows the world's history most. American history begins, not with the discovery by Columbus, but away back in the civilization of Egypt, and the American constitution is the lineal and unbroken descendant of representative government among the Saxons ages before the coming of Julius Cæsar. In fact, the most wholesome lesson of history is the continuity of principles and of institutions, and a perception of this truth should make for rational and intelligent conservatism.

Of necessity, the extension of the secondary course would cause an increase in educational expenditure, but the increased cost would be as nothing compared with the benefits. A thing of such paramount importance as progress is worth its cost manifold, and when the utility of an institution has become manifest, the public is not behindhand to foot the expense. The proportion of the class who patronize the high schools is rapidly growing in this country. California has over one hundred and sixty high schools, not over ten of which are county schools, all the rest being of the city, district, or union type. Over 99 per cent. of the pupils are enabled to attend daily from their homes. It is very apparent that the proposed lengthening of the high-school course can involve scarcely any additional expense or hardship to the patrons.

It would be pertinent to this discussion to show also how foreign countries have solved this problem. Suffice it to say that in no European state about which information is available are pupils admitted into secondary schools at so late an age as with us. The

usual age seems to be from nine to eleven, It is true of the English preparatory schools, of the *lycées* of France with their long courses of eight years, of Spain, of Portugal, and particularly of the German scientific schools with their six-year courses, and of the *Gymnasia* with their nine-year curricula leading to the universities. It will never do to answer that we are sufficient unto ourselves, we need learn nothing from other lands with their "peculiar institutions." After all, human progress is everywhere governed by the same physical and spiritual laws, and everywhere humanity has to work out its salvation in much the same way. In many things we are far too self-sufficient and unwilling to learn from other people. We have inventors, manufacturing enterprises highly capitalized, and, above all, educators, who are groping for light on problems solved long ago by compeers of other nationalities. Other nations seem to evince no such dislike to learn from us, and profit by so doing often to our cost. The American profession of medicine mutually shares in the achievements the world over. The teaching profession can least afford to be provincial. Rather than object, as objection is frequently made, that Europe, with its aristocracy and caste system, needs secondary schools of a highly developed type—a type not in consonance with our institutional ideals—is it not more in accord with our national aspirations to demand a highly developed type of our own? Because of our democratic composition and consequent leveling tendencies, we, of all peoples, have need of a real aristocracy of influence and ability to infuse into our national life a greater stability and the elements of progression, and hence must perfect an educational system affording instruction, not only to all the masses, but to our abler citizens adequate opportunities for the degree of industrial, intellectual, and moral achievement of which they are capable. In competing with the world for honors of whatever kind, America cannot afford to be handicapped by a wasteful and disjointed arrangement of instruction founded on obsolescent conditions. The primacy in progress, even progress that is estimated in dollars, will be owned, not by the nation that builds chiefly on natural resources, but by the nation which draws its strength from the most adequate and scientific system of education.

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